Design Relies on Constraints Integration Matrix in Art and Design Education

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ABSTRACT:

Art and design students today need to learn more skills and knowledge than ever in changing areas with many focuses and heavy workload. To plan the learning, teaching and creative process in a systematic method which may enable a step-by-step and more efficient accomplishment by the students, the 'Integration Matrix' of modules and creative process has been introduced for a curriculum of more than 4000 students in HKDI.

The 'Integration' idea is student-centred, in which their workload, shared knowledge and skills among modules and application are inter-related. Apart from the synergy effect of modules, it also offers a systematic and viable method for the creation of new ideas embracing cultural values, philosophies, tangible and intangible heritage, arts and crafts, social innovative ideas, production methods, up-cycling materials etc. Above all, students could 'formulate' unique and quality outcomes with systematic and discernible methods. Theories and practices could be balanced and achieved explicitly.

Keywords: curriculum integration, social-innovation

SYNOPSIS

The idea of constraints varies from person to person or from community to community. It is relative, and is relative to expectation and satisfaction. How people perceive their needs and constraints defines the design requirements, action of accomplishment and so as the expectation of design education. Higher expectation on mass produced products, faster speed electronics and luxurious life gives rise to soaring constraints, design expectations and hence requirements to design education. Back to the basics, however on the other hand, global constraints on resources of all kinds now foster a simpler expectation and hence different kinds of constraints on the other hand. This does not make the study of art and design simpler. Instead, on top of the conventional skills and knowledge in art and design such as drawing, computer aided design, workshop skills, CAD/CAM skills, ergonomics, creative thinking, cultural studies, professional practice and so on, students also need to learn more about social and economic as well as environmental issues which also involve natural science and social science in practice. This also gives rise to cross-disciplinary studies, community projects, ethnography, new media etc.

THE NUMBER OF MODULES AND ASSIGNMENTS ARE UNBELIEVABLY LARGE

Wrapping up all these complex factors, the art and design education in Hong Kong is delivering various methods in approaching to creative solutions in response to those needs and constraints. With the modules structure in most art and design curriculum, the credit point system makes modules more individual; and the different paces of study of students further affirm the learning of skills and knowledge as individual subject matter. If there are 3 to 4 assignments in one module and there are about 10 module in one semester, students need to handle 30 to 40 assignments, and sometimes the submission deadlines clash with each other! This is really true.

THE MULTIPLE FACTORS THAT NEED TO BE TACKLED IN SETTING ASSIGMENTS

The other constraint in the learning and teaching is the multiple factors that need to be tackled in an art and design assignment. Some considerations like culture and Chinese philosophies are very wide in scope; together with the socio-economic and environmental concerns, students are quite overwhelmed with a lot of considerations or constraints, regardless of the basic skills of sketching, CAD and modeling. The effect is a 'multiplication' instead of an 'addition' one especially there are many modules running simultaneously with different or similar objectives or intended learning outcomes.

Figure 1: A diagram showing the many factors embracing cultures, philosophies, tangible and intangible heritage, arts and crafts, artisans, skillful labours, production methods, up-cycling materials use etc.

THE INTEGRATION MATRIX

The 2 Integration Matrixes may look simple but they provide pragmatic functions for planning, implementation and evaluation. During the development process, they serve as visualised common platforms for communication of involved stakeholders, in which very complicated and implicit ideas could be shared and understood explicitly. It proved that teaching teams could work on the integration ideas in module planning; and students could grasp the ideas for theoretical and practical development in their assignment level.

The 'Integration' idea in designing the learning and teaching as well as project setting is based on the student centred perspective, in which their workload, shared knowledge and skills among modules and application are considered and inter-related. Apart from the synergy effect of modules, it also offers a logical and intuitive method for the creation of new ideas embracing cultural values, philosophies, tangible and intangible heritage, arts and crafts, social innovative ideas, production methods, up-cycling materials etc. Above all, students could 'formulate' unique and quality outcomes with **systematic** and **discernible methods**. Theories and practices could be balanced and achieved explicitly.

This paper shared the methods used in integrating them and tackling constraints in the design process among 4,000+ art and design students, although this is not a quantitative study. Examples used include projects of Cultural Studies, Workshop Practice: 3D Extended Media, Cross-disciplinary and Community Projects. The idea of sustainability and social innovation are embedded into the curriculum and hence the examples to be shown will include those areas.

THE INTEGRATION MATRIX OF ORGANISING MODULES TO FUNCTION WITH SYNERGY

As the constraints are the large numbers of assignments in many modules, the purpose of this Matrix is to alleviate the situation. The ground behind this idea that could integrate the modules of a programme is the common or similar Intended Learning Outcomes (ILOs) different modules under the umbrella of the same programme. No matter they are different in some aspects in skills or knowledge, there must be commonality that they are designed under that certain programme.

Also because of this reason, there will be overlapping of contents which could be i) unnoticed overlapping ii) complementary contents and iii) deliberate reinforcement. Much of the times, when team members are unaware of the inter-relationship of the overlapping condition, redundancy will be resulted. However, complementary effect and reinforcement will be possible if Module Integration could be previewed and planned ahead. The following figure 2 shows the initial planning stage of the Integration Matrix. It indicates the preference and possibilities of integration giving a tick to the intended assignments and modules. The vertical column is the module clusters, and the horizontal row is the possible and reduced number of assignments, as they could be grouped together.

Modules Integration Matrix

for planning, communication and development ref.

The number '1' indicates the initial proposal of integration
The colours represent different Cluster Groups
Columns and Rows could be added according to real situations
Numbers are examples only

Sem 1	Assgn't Name	Assign't 1	Assign't 2	Assign't 3	Assign't 4	Assign't 5
Module Name / No. of module Integrated / No. of Assign't		2	2	2	3	4
2D xxx	3	1			1	1
3D xxx	2		1		1	
CAD xxx	2	1				1
CS xxx	1			1		
Proj xxx	3		1		1	1
VA xxx	2			1		1
Sem 2	Assgn't Name	Assign't 1	Assign't 2	Assign't 3	Assign't 4	Assign't 5

Integration   Deadline Schedule   Integration with Curr hrs

Figure 2: The Modules Integration Matrix in the planning stage

Then, the number of curriculum hours could be distributed accordingly based on the weighting and distribution of the module contents. This is the fine tune stage – Figure 3

3

Modules Integration Matrix - Curriculum Hrs

for planning, communication and development ref.

The colours represent different Cluster Groups
Columns and Rows could be added according to real situations
Numbers are examples only

Sem 1	Assgn't Name	Assign't 1	Assign't 2	Assign't 3	Assign't 4	Assign't 5
Module Name / No.of Hrs Integrated / No. of Curr Hrs		26	26	39	39	65
2D xxx	39	13			13	13
3D xxx	26		13		13	
CAD xxx	39	13				26
CS xxx	26			26		
Proj xxx	39		13		13	13
VA xxx	26			13		13

Figure 3: The Modules Integration Matrix in the fine-tune stage

After this stage, the submission date of different assignments could be put together such that if there is any clash of deadline for submission, it could be adjusted in advance – Figure 4. During all these stages, teaching team could visualise the condition and inter-relationship of the development of integration. Finally, students could also see the submission schedule.

Figure 4: The Submission Schedule of all assignments extended from the Modules Integration Matrix

To facilitate the above integration, however, there are several enabling factors that need to be fulfilled.

Firstly, there should be the support from senior management such that educed workload will be recognised as efficient and beneficial to students. Secondly, the assessment criteria of different modules using the integrated assignment need to be clearly written. Thirdly, the timetable should be timely devised to fit the running of the inter-related classes. Above all, connect, co-operate and co-create are the spirit behind the work of integration.

THE INTEGRATION MATRIX OF CREATIVE PROCESS: SYSTEMATIC AND VIABLE METHOD FOR THE CREATION OF NEW IDEAS EMBRACING CULTURAL VALUES, ARTS AND CRAFTS, SOCIAL INNOVATION IDEAS ETC.

Apart from the Module Integration, the Integration Matrix of Design Process depicts the levels and elements that could be picked and consciously integrated into an art and design assignment. It offers a systematic and viable method for the creation of new ideas embracing cultural values, philosophies, tangible and intangible heritage, arts and crafts, social innovative ideas, production methods, up-cycling materials etc. Above all, students could 'formulate' unique and quality outcomes with systematic and discernible methods. Theories and practices could be balanced and achieved explicitly.

Figure 5. shows the three levels of application of Values (Reflection), Experience of Interaction (Behaviours), and Visceral Elements such as motifs, patterns, materials and sound that could be noticed by the appearance. 'I hear and I forget, I see and I know, I do it and I understand' – *Confucius*

explained the 3 levels of interactions and the effect. While Donald Norman, 1980, advocated the three levels of emotional response – visceral, behavioural and reflective (memory).
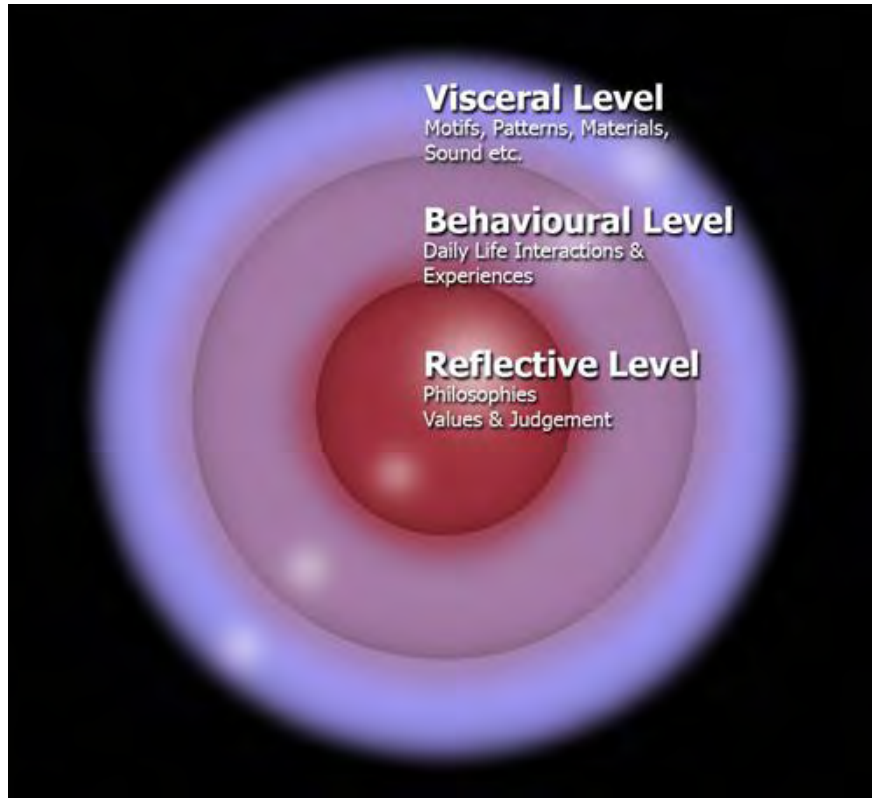

Figure 5: The three levels of application of Values (Reflection), Experience of Interaction (Behaviours), and Visceral Elements

No.		Assignment/Idea 1 Lantern Design Figure 7	Assignment/Idea 2 Onion Skin Dyeing Figure 8	Assignment/Idea 3 'Fluke socks' Figure 9
1	Cultural Values Philosophies/beliefs…			*
2	Experience of Use Functions & Maintenance/ reuse/up-cycling…	*		*
3	Production Process Carbon footprint/ energy consumption/ batch production…		*	
4	Production Persons Artisans/ skilled labour/ DIY/ cheap labour..		*	
5	Materials Selected Up-cycling materials/ pre-production waste/ low toxic		*	
6	Traditional Arts & Crafts	*	*	
7	Motif, Patterns…	*		*

Figure 6: Integration Matrix of the Creative Process.

Figure 7: Lantern with no lamp shield, but revealing the cloud motif through projection.

The lantern designed in the Cultural Studies assignment. Though it used mainly the idea of visceral element – the cloud motifs and traditional arts and crafts to mount the colour paper, it created a new experience of viewing the lantern by the projection of shadow on the wall or ceilings which is different from the cliché of using lamp shield. In this example, not very high level in the matrix was used, but only few selected elements already made a difference.

Figure 8: The dyeing workshop led by KaCaMa. A collaborative project with the students of the Visual Arts and Culture Programme, Department of design Foundation Studies. Project Tutors: Jeff Wan & Rita Lam.

The dyeing art was produced by onion skin pigment led by KaCaMa workshop in a collaborative project of the Cross-disciplinary project of the Visual Arts and Culture Programme. This time, if any social entrepreneur could be aware of the trick or hint of identifying at least one point in the Matrix, he or she could produce unique art or design with similar 'formula' in the future. The production process and materials were highlighted, but still arts and crafts should also act as the base for executing the ideas. It will be even better, if the art pieces carry meaning related to the material used or even with cultural values.

Figure 9: The socks design in Cultural Studies Project, group work.

The assignment of Figure 9 was done in the Cultural Studies and Design module. The philosophy and cultural value of Taoism was studied first. With the embarrassing experience of putting those cursing symbols in the wallets by teenagers, the transformation onto a hidden position underneath the socks was designed. The visuals were preserved while the application was changed. Note that there is no need to select all aspects in the Matrix for design though it could be available when students think more on those aspects.

No.		Assignment/Idea 4 Work with bamboo Figure 11- 16
1	Cultural Values Philosophies/beliefs…	✳
2	Experience of Use Functions & Maintenance/ reuse/up-cycling…	✳
3	Production Process Carbon footprint/ energy consumption/ batch production…	✳
4	Production Persons Artisans/ skilled labour/ DIY/ cheap labour..	✳
5	Materials Selected Up-cycling materials/ pre-production waste/ low toxic…	✳
6	Traditional Arts & Crafts	✳
7	Motif, Patterns…	✳

Figure 10: Integration Matrix of the Creative Process of Assignment 4.

These projects were accomplished across different time and modules; and more aspects are covered in the matrix. The idea of the Hong Kong red plastic lamp shield was started in the Hong Kong Pavilion in the Shanghai Expo designed by the Product and Interior Department of HKDI. After that, the installation was transferred back to Hong Kong Design Institute for permanent display.

Figure 11: The Shanghai Expo Hong Kong Pavilion using the red lamp shields as design idea, by Department of Product and Interior, HKDI.

In the Cultural Studies Project after that, some students studied on the Chinese bamboo crafts in lantern, paper offering as well as Fa-pei (Floral Signboard) design and making. Of course these fast growing bamboo material, light weight and inexpensive, is welcomed and celebrated widely in the country throughout history. Poetic and philosophical ideas grow out of the physical application even more well known in paintings and poems.

Figure 12: Introduction of 'Fa Pei' Master Mr Wong Nai Chung

The Department of Design Foundation Studies of HKDI also invited the master of Fa-pei, Mr Wong Nai Chung (Figure 12), to be the creator-in-residence to work with the Visual Arts and Culture students. Transformed art pieces and designs were created in Figure 13, which also prepared for the integration of another Workshop Practice 3D and Extended Media project later.

Figure 13: Students of Visual Arts and Culture Programme, Department of Design Foundation Studies, HKDI
Top and middle: Group work by Chau Tai Er, Chan Yan Yan, Tsui Wan Yee
Bottom: Lau Wing Ying, Tung Sin Ting, Hung Tsz Ying, So Ka Wai, Tsui Ka WingProject Tutors: Rita Lam & Jeff Wan

The craftsmanship was applied and transformed into other execution based on this traditional craft in Hong Kong, which is also a social heritage and is diminishing nowadays. Tutors planned to introduce the crafts of Mr. Wong, the Fa Pei master, in several lectures, and students worked with him in the creative process. As such, innovation could be co-created in this project.
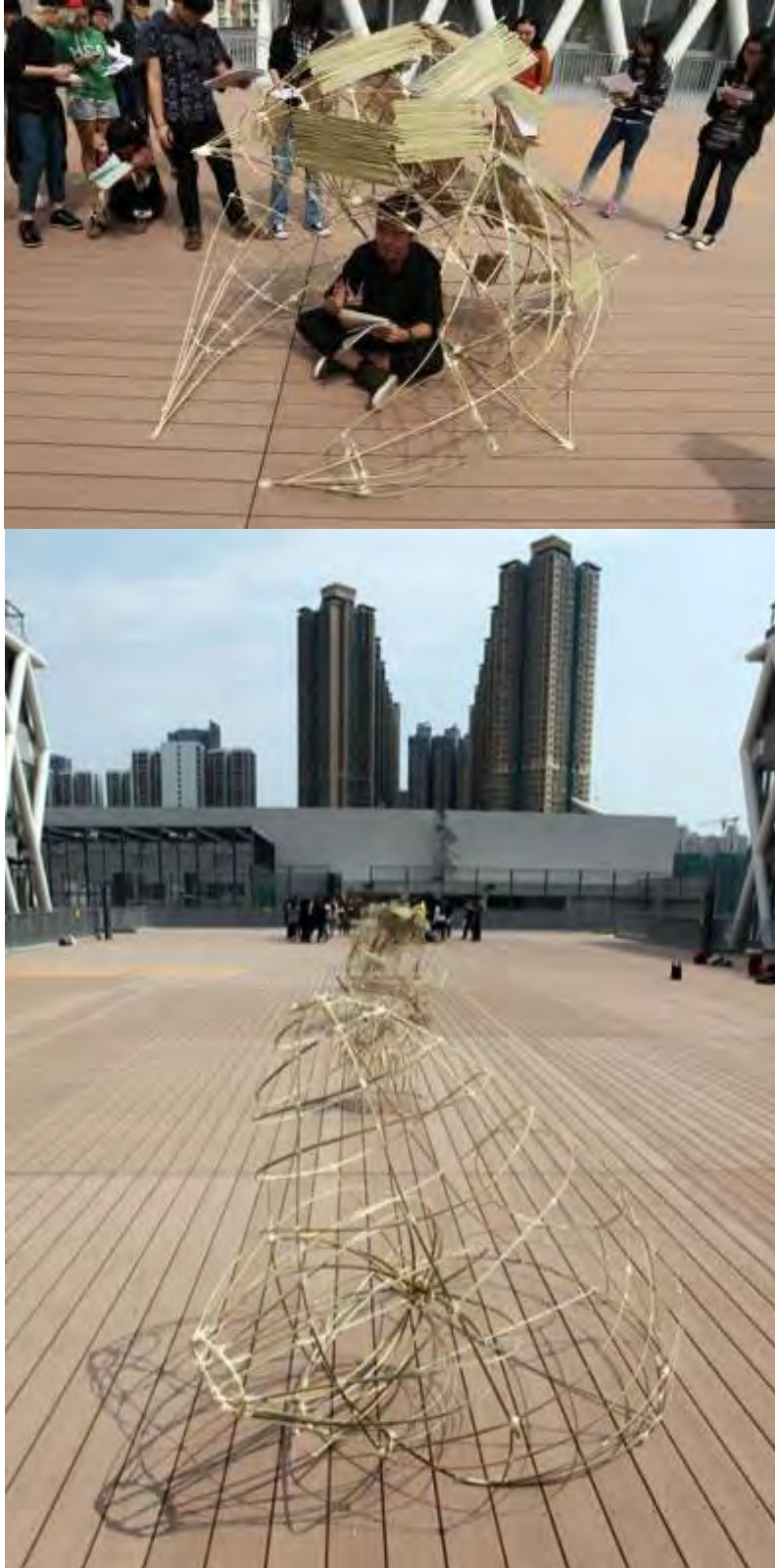
Figure 14: This is my Hong Kong This is My Home – Bamboo. Module: Workshop Practice: 3D and Extended Media. Project Tutors: Edwin Wong & Horace Cheung. Students: Top photo: Leung Yiu Wa, Chan Chi Yin & Tang Shu Wing. Bottom photo: all work of 2 classes, Visual Arts and Culture programme, Department of Design Foundation studies.

Figure 14 was the Workshop Practice: 3D and Extended Media project in Visual arts and Culture programe using bamboo as material to express the concept of "This is My Hong Kong. This is My Home". A group of students recalled the memory of the Shek Kip Mei fire which engulfed the houses made from zinc sheet metal. In remembrance of this, the art form was expressed in the form a phoenix (Top) which was sheltered by a group of shade resembling zinc metal sheets and the phoenix is a symbol of rebirth after the fire. This was also an extension of using of bamboo in another execution.

Figure 15: The installation of the 'Egg' set up under the typical HK red light shields.

Figure 15 is an installation shown in the Graduation Show last year in the Hong Kong Design Institute. The idea of using an jumbo egg displaying under the red light lamps is a metaphor of incubating the egg (students) under the favourable environment, which gives rise to the sound development of them. Once the students have been grown up, they should be able to continue their development in the industries with energy and lively energy. Of course the fast growing properties and energy of bamboo and eggs are also expected to be seen through the performance of the graduates in their near future.

Figure 16: The creation process of the installation - The Egg. Created by Visual Arts and Culture Students, tutors: Horace Cheung together with Patrick Ford & Edwin Wong (Programme Leader), Headed by Dr Lam Yan Yan, Head of Department of Design Foundation Studies, HKDI.

The materials, craftsmanship and transformation of concepts and skills are typical integration of different modules which embrace culture, skills from artisans, knowledge of tutors and sustainable materials. Starting from the idea of lamp shields in typical Hong Kong culture, bamboo technique in Fa Pei, transformation process in making fashionable items, as well as 3D workshop in representing the Hong Kong living and the setup of the Egg installation, the idea of integration was accomplished in different dimensions and angles.

CONCLUSION

The multi-faceted arts and design curriculum today demand students to learn more skills and knowledge than ever. Apart from the classical design process which involve functions, emotion, ergonomics, production and marketing; cultural, social and environmental concerns further 'enrich' the learning and teaching process. This could be overwhelming when students are studying under the constraint of time. In order not to compromise on the quality of learning and at the same time in order to make them understand the inter-relationship of different kinds of skills and knowledge, these 2 Module Integration Matrixes help to integrate modules with similar but different intended learning outcomes, such that the so-called 'overlapped' contents could complement one another and skills and knowledge learnt in one module could be applied to another related module in the inter-related assignments. Workload for students is hence alleviated, but prior planning and co-creation among tutors are needed. In addition, though there are soaring factors that students need to pay attention in the art and design process, the Integration Matrix of the Creative Process enables them to vsiualise and discern the elements they need or want to manoeuvre in the different levels – the visceral, behavioural and reflective level. Then they could select the patterns or motifs, colours and materials in the visceral level, design the experience and usage in the behavioural level, and maintain relatively stable memory in the reflective level. As such, even with a more complicated and changing environment, the students could still learn with affordable workload and clear direction covering cultural, social, economic and environmental concerns.

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